Starting a Paper Mill in the State.

79. മിസ്റ്റർ വി. കെ. കുട്ടി.— താഴെ പറയുന്ന ചോദ്യങ്ങൾക്ക് ഗവൺമെണ്ട് സദയം മറുപടി പറയുമോ.—

(എ) ഈ രാജ്യത്തെ പ്രശസ്തമാംവണ്ണം ഭരിച്ചുകൊണ്ടിരുന്ന മിസ്റ്റർ എ. ആർ. ബാനർജിയുടെ കാലത്തു സംസ്ഥാനത്തെ മലകളിൽ നിന്നും കല്ലൻമുള, പൊള്ളമുള, കളമാവ്, മുതലായ ഏതാനും അസംസ്കൃത സാധനങ്ങൾ ലണ്ടനിൽ അയച്ചുകൊടുത്തു കടലാസ്സു വ്യവസായത്തിനു അതു എത്രത്തോളം ഉപകരിക്കുമെന്നു പരിശോധന നടത്തുകയുണ്ടായിട്ടുണ്ടെന്നു പറയുന്നതിൽ വല്ല പരമാർത്ഥവുമുണ്ടോ;

(ബി) ഉണ്ടെങ്കിൽ അവിടെനിന്നും ലഭിച്ച വിദഗ്ധാഭിപ്രായം എന്തായിരുന്നു;

(സി) ഒരു കടലാസ്സ് വ്യവസായശാല സ്ഥാപിക്കുന്നതിനെ സംബന്ധിച്ചു അന്നത്തെ ഗവൺമെണ്ട് വല്ല നടപടിയും നടത്തിയിരുന്നോ; അതു നടപടികൾ എന്തെല്ലാമായിരുന്നു;

(ഡി) പിന്നീട് അതു വേണ്ടെന്നുവെക്കുവാനുണ്ടായ കാരണമെന്തു; ഈ വിഷയത്തിൽ ഗവൺമെണ്ടിനു് എന്തു ചിലവു വന്നിട്ടുണ്ട്;

(ഇ) ഒരുകാലത്തു കടലാസ്സ് വ്യവസായശാല സ്ഥാപിക്കുന്നതിനു എന്തു ചിലവു വരുമെന്നു ഗവൺമെണ്ട് അന്വേഷിച്ചിട്ടുണ്ടോ?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.—

(എ) ഉണ്ട്.

(ബി) കൊച്ചീസംസ്ഥാനത്തെ മലകളിൽ ഉള്ള പലജാതി മരങ്ങളും മുളകളും കടലാസ്സുണ്ടാക്കുവാൻ ഉപയോഗിക്കത്തക്കതാണെന്നായിരുന്ന വിദഗ്ധന്മാരുടെ അഭിപ്രായം.

(സി) ഉവ്വ്. ഒരു കടലാസ്സുവ്യവസായശാല സ്ഥാപിക്കുന്നതിനു വേണ്ട സകല വിവരങ്ങളേയും അതിന്റെ ആയവ്യയകണക്കുകളേയും അങ്ങിനെ ഒരു സ്ഥാപനം ഉണ്ടാക്കുവാനൊരുങ്ങുന്നവർക്കു ഗവൺമെണ്ടിൽനിന്നു ചെയ്തുകൊടുക്കുവാൻ ഒരുക്കമുള്ള സഹായങ്ങളേയും പൊതുജനങ്ങളുടെ അറിവിനുവേണ്ടി ദിവാന്റെ ആർ. ഒ. സി. ഇൻ/വ്യവ-ൽ ഫ്രം ഫെബ്രുവരി ഫവ-ാനു-യിലെ പ്രൊസീഡിങ്ങ്സ് ആയി പ്രസിദ്ധപ്പെടുത്തിയിട്ടുണ്ടായിരുന്നു.

(ഡി) പന്നീട് സർ ജോസഫ് ഭോർ, സർ ടി. വിജയരാഘവാചാരി ഇവർ ദിവാന്മാരായിരുന്നപ്പോഴും ടി. സംഗതിയെപ്പറ്റി അന്വേഷണം നടത്തി ഈ വ്യവസായത്തിനു ഇവിടെയുള്ള സൌകര്യങ്ങളെ മൂണ്ടിക്കാണിച്ചും ഇതു പൊതുജനങ്ങളുടെ ശ്രമംകൊണ്ടു് സ്ഥാപിക്കേണ്ടതാണെന്നുള്ള അഭിപ്രായത്തോടുകൂടിയും വീണ്ടും പ്രൊസീഡി

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ങ്ങ് സ് പരസ്യപ്പെടുത്തുകയുണ്ടായിട്ടുണ്ട്. പ്രൊസീഡിങ്ങ് സ് കളുടെ പകർപ്പ് അനുബന്ധമായി ചേർക്കുന്നു.

(Appendix IV.)

ഇതിനെപ്പറ്റി അന്വേഷണം നടത്തിയിട്ടുള്ള എല്ലാവരുടേയും അഭിപ്രായം ഇതു സർക്കാർ ചിലവിന്മേൽ തുടങ്ങുന്നതല്ലെന്നും നാട്ടുകാരുടെ ശ്രമംകൊണ്ടു നടപ്പാക്കേണ്ടുന്നാണെന്നായിരുന്നു. അതിനു വേണ്ടി ചെയ്യുന്ന പ്രോത്സാഹനങ്ങളും ഫലപ്രദമാവാത്തതുകൊണ്ടാണ് ഈ വ്യവസായം ഇവിടെ ആരംഭിക്കുവാനും ഇതുവരെ ഇടവരാത്തതു്.

ഇതിന്റെ അന്വേഷണത്തിനുവേണ്ടി ഗവൺമെണ്ടിൽനിന്നും എന്തു ചിലവായിട്ടുണ്ടെന്നു ഇപ്പോൾ പറയുവാൻ നിവൃത്തിയില്ല.

(ഇ) ഫാൻറ്റ-ൽ ഉണ്ടാക്കിയിട്ടുള്ളതു കണക്കുപ്രകാരം ഒരു കടലാസ്സു വ്യവസായശാല തുടങ്ങുവാൻ ൫,൦൦൦ പവൻ അല്ലെങ്കിൽ അന്നത്തെ പവന്റെവില അനുസരിച്ചു് ൪,൯൨,൦൦൦ക. ചിലവുണ്ടെന്നാണ് കണ്ടിട്ടുള്ളതു്.

മിസ്റ്റർ വി. കെ. കുട്ടി.— ഫാൻറ്റയിൽ ആണോ പ്രൊസീഡിംഗ്സ് പ്രസിദ്ധപ്പെടുത്തിയതു്?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.- അവസാനത്തെ ചോദ്യത്തിനുത്തരമായി ൯,൯൨,൦൦൦ ക. മൂലധനം വേണമെന്നാണു പറഞ്ഞിരിക്കുന്നതു്. അതു് ആ വ്യവസായശാല നടപ്പാക്കുന്നതിനു വേണ്ടുന്ന സംഖ്യ മാത്രമാണു്. എന്നാൽ ആ വ്യവസായത്തിന്റെ നടത്തിപ്പിനു് അതുതോളം സംഖ്യയുംകൂടി വേണ്ടിവരുമെന്നു കാണുന്നുണ്ടു്. ഇതിനെ സംബന്ധിച്ചുള്ള വിദഗ്ദ്ധാഭിപ്രായം ഈ വ്യവസായം തുടങ്ങുന്നപക്ഷം ൫൦ ലക്ഷത്തോളം ഉറുപ്പിക മൂലധനം വേണ്ടിവരുമെന്നാണു്. കൂടാതെ അന്നു് വേറെ ഒരു അഭിപ്രായം കൂടി പറഞ്ഞതു് ഇതിന്റെ ശരിയായ നടത്തിപ്പിനു് ഏകദേശം ൭൫ ലക്ഷം ഉറുപ്പികവരെ വേണ്ടിവരുമെന്നായിരുന്നു.

മിസ്റ്റർ വി. കെ. കുട്ടി.— ൫൦ കൊല്ലത്തിനു മുമ്പാണു് ഈ റിപ്പോർട്ടു ഉണ്ടായിട്ടുള്ളതു്. ഇപ്പോൾ തൊഴിലില്ലായ്മ നാട്ടിൽ വർദ്ധിച്ചുവരുന്നതുകൊണ്ടു് അതിന്റെ പരിഹാരാർത്ഥം എന്തെങ്കിലും ഗവൺമെൻറിൽനിന്നും ചെയ്യേണ്ടതാണെന്നുള്ള കാര്യത്തിൽ ഗവൺമെൻറു് ആലോചിച്ചുവരുന്നുമുണ്ടു്. ആയതുമായിട്ടു് ഈ കാര്യത്തിൽ ഗവൺമെൻറു് ഉത്സാഹിക്കുന്നപക്ഷം നാട്ടുകാരും ഉത്സാഹമുള്ളവരായിരിക്കും. മാത്രമല്ല നാട്ടിലെ തൊഴിലില്ലായ്മയും ഇല്ലാതെയാകും. അതുകൊണ്ടു് ഈ കാര്യത്തിൽ ഗവൺമെൻറു് ദയവുചെയ്തു പ്രവൃത്തിക്കുമോ?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.— ഈ സംഗതിയെ സംബന്ധിച്ചു് പല വിദഗ്ദ്ധന്മാരുമായി അന്വേഷണം നടത്തിയതിൽ അവരുടെ

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യെല്ലാം അഭിപ്രായം ഇങ്ങിനെ ഒരു വ്യവസായം ഗവമ്മെൻറിൽനിന്നു തുടങ്ങുവാൻ സാധിക്കുകയില്ല; പൊതുജനങ്ങളുടെ ഉത്സാഹം വേണ്ടതാണെന്നാണ്.

മിസ്റ്റർ കെ. എം. കുഞ്ഞുമൊയ്തീൻ.— നാട്ടുകാരുടെ ശ്രമംകൊണ്ട് ഈ വ്യവസായം തുടങ്ങുവാൻ സാധിക്കുമെന്നുള്ള ഗവമ്മെൻറിന്റെ മിഥ്യാബോധം ഇപ്പോഴെങ്കിലും മനസ്സിലായിട്ടുണ്ടോ?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.— ഈ വ്യവസായം ഒരിക്കലും ഗവമ്മെൻറിൽനിന്നു തുടങ്ങുവാൻ സാധിക്കയില്ലെന്നാണ് പറയുന്നത്.

മിസ്റ്റർ കെ. എം. കുഞ്ഞുമൊയ്തീൻ.— നാട്ടുകാരെക്കൊണ്ടു തുടങ്ങുവാൻ സാധിക്കുകയില്ലെന്നല്ലേ ഇതുവരെ ഉണ്ടായിരുന്ന അഭിപ്രായം?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.— ഗവമ്മെൻറിൽനിന്നും തുടങ്ങുവാൻ പ്രയാസമാണെന്നാണ് വിദഗ്ധന്മാരുമായി ആലോചിച്ചതിൽ അവർ പറഞ്ഞിട്ടുള്ള അഭിപ്രായം.

മിസ്റ്റർ കെ. എസ്സ്. പണിക്കർ.— വിദഗ്ധന്മാരുടെ അഭിപ്രായത്തിനുവേണ്ടി വല്ല സംഖ്യയും ഗവമ്മെൻറിൽനിന്നു ചിലവാക്കീട്ടുണ്ടോ?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.— പല കൊല്ലങ്ങളിലായി പല തവണകളിൽ ചിലവുചെയ്തിട്ടുണ്ട്.

മിസ്റ്റർ കെ. എസ്സ്. പണിക്കർ.— ആകെ എന്തു സംഖ്യ ചിലവായിട്ടുണ്ടെന്നു പറയാമൊ?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.— അതിനു കണക്കുവച്ചിട്ടില്ല.

മിസ്റ്റർ കെ. എസ്സ്. പണിക്കർ.— വിദഗ്ധാഭിപ്രായം എടുത്തിട്ടുള്ളതു് ആരിൽനിന്നാണു്?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.— അതു് ഇതിൽ അനുബന്ധമായി ചേർത്തിട്ടുള്ള പ്രൊസീഡിംഗ്സിലുണ്ടു്.

മിസ്റ്റർ കെ. എസ്സ്. പണിക്കർ.— അവക്കുവേണ്ടി ഒരു ഗിനി കൊച്ചീ സ്റ്റേററിൽനിന്നു ചിലവായിട്ടുണ്ടെന്നുള്ളതു ഗവമ്മെൻറിനറിയാമൊ?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.— അതിന്റെ കണക്കൊന്നും കാണുവാനില്ല.

മിസ്റ്റർ കെ. അയ്യപ്പൻ.— പണമില്ലാത്തതുകൊണ്ടു തുടങ്ങുവാൻ സാധിക്കുകയില്ലെന്നൊ അതല്ലാ ടെക്നിക്കലായിട്ടുള്ള വിഷമമുണ്ടെന്നൊ എന്താണു പറയുന്നതു്? ഗവമ്മെൻറിൽനിന്നും മനസ്സിലാക്കിയിരിക്കുന്നതു പറഞ്ഞാൽ മതി.

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മിസ്റ്റർ ടി. നാരായണമേനോൻ.- ഗവമ്മെൻറിൽനിന്നും നടത്തുവാൻ സാധിക്കുകയില്ലെന്ന മാത്രമേ പറയുവാൻ തരമുള്ളൂ.

മിസ്റ്റർ കെ. എം. ഇബ്രാഹിം.—തിരുവിതാംകൂറിൽ കടലാസ്സ് വ്യവസായശാല നടന്നുവരുന്നുണ്ടെന്ന ഗവമ്മെൻറിനറിയാമോ; അതു ഗവമ്മെൻറു വകയല്ലേ?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.- അല്ല.

മിസ്റ്റർ കെ. എം. ഇബ്രാഹിം.— വേറെ കൊല്ലമായിട്ടും ഒരു സ്വന്തമായ കടലാസു വ്യവസായശാല നടത്തുവാൻ സാധിക്കാത്ത കാരണത്താലും തിരുവിതാംകൂറിൽ തുടങ്ങി നടന്നുവരുന്ന കാരണത്താലും ഇവിടത്തെ ജനങ്ങളുടെ സാമ്പത്തികാവശ്യകതകളെ മനസ്സിലാക്കി ആ തരത്തിൽ ഇവിടത്തെ തൊഴിലില്ലായ്മയെ പരിഹരിക്കുവാൻ വേണ്ടി ഒരു വ്യവസായശാല ഗവമ്മെൻറിൽനിന്നും നടത്തുവാൻ സാധിക്കുകയില്ലേ?

മിസ്റ്റർ ടി. നാരായണമേനോൻ— എവിടെയും ഇങ്ങിനെ ഒരു വ്യവസായം തുടങ്ങി ശരിയായി നടന്നുവരുന്നതായിട്ട കാണുവാനില്ല. വളരെ ബുദ്ധിമുട്ടാണ് വ്യവസായശാലാടത്തുന്ന കാര്യമെന്ന് അഭിപ്രായം ഉണ്ടായിക്കാണുന്നുണ്ട്.

മിസ്റ്റർ കെ. എം. ഇബ്രാഹിം.— ബുദ്ധിമുട്ടെന്താണ്? അതിൽ ഏറ്റവും പ്രധാനമായിട്ടുള്ള ഒന്നു പറഞ്ഞാൽ കൊള്ളാം.

Mr. T. S. Balarama Ayyar—Sir, I was a member of the committee appointed by Mr. Joseph Bhore to investigate into the possibilities of paper manufacture in the State. With your permission, I shall give out some information which I possess. One of the most important reasons why it was given up, if I remember right, is that the forests of Cochin did not possess sufficient quantity of fuel to convert bamboo or wood into pulp. That is to say, before the heating and boiling can be done by Hydro Electric Energy, there was no chance of starting a bamboo pulp or wood pulp factory in the State.

മിസ്റ്റർ കെ. എസ്സ്. പണിക്കർ—ഏലക്ട്രിസിറ്റി വരുമ്പോൾ ആ കാര്യം ശരിയാകയില്ലേ?

Mr. T. S. Balarama Ayyar— When the Hydro Electric Energy comes this difficulty can be solved.

മിസ്റ്റർ കെ. എസ്സ്. പണിക്കർ— നമ്മുടെ മലകളിലുള്ള തടി, മുളകൾ, ഘനം കുറഞ്ഞ മരങ്ങൾ മുതലായ പുരപണിക്കു കൊള്ളാത്ത സാധനങ്ങൾ ഇപ്പോൾ വിൽക്കുകയാണോ ചെയ്യുന്നത്?

മിസ്റ്റർ ടി. നാരായണമേനോൻ.- ആ സാധനങ്ങളെല്ലാം ലേലത്തിൽ വിൽക്കുകയാണു ചെയ്യുന്നത്.

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മിസ്റ്റർ കെ. എം. ഇബ്രാഹിം.—ഫറൂക്കൊല്ലം മുമ്പ് ഉണ്ടായ അഭിപ്രായംതന്നെ ഇപ്പോഴും ഗവർമ്മെൻറു മുകെ പിടിക്കുകയാണൊ ചെയ്യുന്നത്?

Mr. President.—The House cannot have a discussion on an industry at question time.

Amballur-Kallur Road — Improvement of.

80. Mr. T. A. Ramachandra Ayyar.—Will the Government be pleased to state:—

(a) whether they have done anything to improve the Amballore-Kallur road after the admission of the Diwan Peishkar during the last budget session that the road is in a very bad condition;

(b) is not toll collected even now on the road though it is in a state of deplorable condition;

(c) what is the length of the road and the amount of expenditure spent on it during last year?

Dr. E. S. R. Menon.—(a) Yes.

(b) Yes.

(c) Two miles from Amballur P. W. D. road to Kallur. Rs. 132.

Mr. T. A. Ramachandra Ayyar.—What have they done to improve the condition of the road?

Dr. E. S. R. Menon.—We have already placed laterite metals on the road and we have put some temporary support to the bridge and two caution boards have also been put.

Mr. T. A. Ramachandra Ayyar.—The Diwan Peishkar has admitted that the road is in a very bad condition and the Government also admits that the toll is collected even now. May I know how they justify their action of collecting toll from a road which is in a very deplorable condition?

Dr. E. S. R. Menon.—The Government have an idea of metalling this road. The cost will come to Rs. 12,000. In these times of financial stringency it may not be possible to find funds for it. It will be considered by Government when the finances improve.

Dr. A. R. Menon.—What is the amount collected in the shape of toll from that road?

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APPENDIX III.

List III.

Question (2).

Form III Public Examination,

	Total No. appeared	Total No. passed
	3401	2013

S. C. L. C. Examination.

Full course	1727				
		es	e only	s only	supplemental passes
Supplementary	637	525	321	16	265
	2364	1127			

Note. 'e' means eligible for University course only.
's' means eligible for Public Service only.

APPENDIX IV.

PROCEEDINGS OF THE GOVERNMENT OF COCHIN

(Local and Legislative Department)

(Education)

Read again Diwan's Proceedings dated 18th February 1913, Ref. on C. No. 597/88.—

READ the following papers.—

(1) Extract from the notes on the Industries of Cochin, submitted by the Special Officer, regarding wood-pulp for paper making;—

"Wood-pulp for paper.—As we have an abundance of raw materials for making pulp suitable for the manufacture of paper, the question of exploiting them deserves to be carefully investigated. Ten years ago, Mr. Alwar Chetty made a rough calculation of the potentialities of the Orukomban Working Circle, according to which over 2½ million cubic feet of soft woods suitable for paper manufacture are available in that circle alone. As other cricles also are tapped by the Forest Tramway and as the plains also can supply their quota of suitable materials for the purpose, such as plantain trees, Murukku (Erythrina Indica), silk cotton (Bombax Malabaricus) and the like, there is ample material for a pulping mill on a moderate scale at, say, Chalakkudi, which has water communication for the greater part of the year with the port of Cochin. There is, however, no chance in the near future of private capitalists coming forward to take up the work. I am inclined to think that it should be taken up by the Forest Department as part of their scheme of work for turning the resources of the forests to the best account. I would, therefore, suggest that the Working Plan Officer be asked to make when making his reconnaissance, as accurate an estimate as possible of the

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possibilities of each circle in this respect, and that the department be asked to send specimens of all soft woods to England or elsewhere for expert opinion. This will give the necessary data for deciding whether it will pay to establish a pulping mill as a department concern and, if so, on what scale it should be. If chemical wood pulp is forthcoming in sufficient quantities here there is every chance of capitalists coming forth to set up a paper mill. The value of paper and pasteboard imported in 1900 was about a lakh and a half of rupees."

(2) Extract from the Diwan's Proceedings on the above, dated 9th December 1910 No. 3663/85—

"Wood-pulp.—Mr. Achyutha Menon rightly points out that there is abundance of raw material for making pulp suitable for the manufacture of paper. He suggests that a scheme should be formulated by the Forest Department for turning the resources of the forests to the best account. The Darbar have continuously during the last few years had this important matter in view. A complete collection of soft wood, grass and bamboos suitable for wood-pulp has been made under the orders of the Diwan by the Conservator of Forests for being tested by experts in Europe. These specimens will be exhibited at the Industrial Exhibition, and necessary steps taken to see if any of them are suitable for the wood-pulp industry. The possibility of hydro-electric schemes in the tracts where large extents of soft wood forests are lying untapped for industrial purposes is an encouraging circumstance in Cochin. The Diwan has on personal inspection found the existence of such possibilities on a large scale in the way of water power and other facilities in such areas. Further investigation of a practical nature will be facilitated by the institution of recently sanctioned State Scholarships to be awarded to the student who undertakes to undergo a full course of training in all the soft wood industries. Should, however, any Private Firm or Company apply for any experimental concession in these specially adopted areas for making wood-pulp, the Darbar will be ready to consider the applications favourably, as they are decidedly of opinion that private enterprise has greater chance of success than Government initiative.

(3) Report on the results of Examinations of the Cochin Forest soft timbers and the bamboos by Dr. Quirin Wirtz, M. A., F. I. C., Consulting Chemist and Analyst, London, dated 19th August 1911:—

"At the end of May I received from Coxley Mills three cases containing various woods from Cochin, with the request to examine them and report to you as to their suitability for paper making purposes. As it was not a question of ascertaining the most economical method of treating these woods for the purpose, I have boiled them all by the Soda process in the same fashion; namely by using Soda liquor corresponding to 33% of Na—

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20, calculated on the weight of the raw wood and boiling for four hours under a pressure of 60 lbs. After washing, the yield was determined, and thereupon the fibre was disintegrated and made into pulp sheets, samples of which I enclose herewith.

Another portion of each of the boilings was submitted to a bleaching test, and the bleached pulp again made into sheets, the samples of which are also enclosed.

I have also examined the fibres microscopically, and finally have taken micro-photographs of same at an enlargement of 64 diameters, and of these micro-photographs I also enclose copies herewith.

In a very few instances the woods were not in good condition, that is to say, they had been cut down when they were full of sap and were not properly dried in a draught of air, and in consequence they had suffered from dry rot. This was particularly the case with the samples No. 8 (Odina Wodier) and No. 42 (Spondias Mangifera).

I now beg to give you the result of my experiments with the woods, as follows:—

No.	Name	Yields	Air-dry	Bleach used (Calculated on raw fibre)
1	Jruppa. Bassia Malabarica	36·4 per cent.	12·3 per cent.	The fibre is fairly long, and of good felting quality. It is rather fine. The yield is fair.
2	Kani. Terminalia Colerica	42·2 do	23·2 do	This fibre is fairly good and is of a good felting quality. The yield is good.
3	Pazhu. Carcya Arborea	39·3 do	30·3 do	The fibre is somewhat fine, but of a good felting quality. The yield is very fair.
4	Manjakadamby Odina Cordifoha	40·9 do	14·0 do	This fibre, although fine, is of a good felting quality. The yield is good.
5	Payin. Vateria Indica	37·4 do	16·42 do	The fibre is fair but there is a large amount of cells which would have no felting power. The yield however, is fair.

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No.	Name	Yields	A-dry	Bleach used (Calculated on raw fibre)
6	Nedauar. Polyalthia Fragrans	39·9 per cent	19·6 per cent	This fibre is fair, but somewhat short. The yield is very fair.
7	Cheru. Holigarna Arnottiana	44·1 do	12·8 do	This fibre, like the last is somewhat short, but otherwise it is fair. The yield is good.
8	Annakara. Odina Wodier	39·2 do	21·8 do	This wood requires more treatment than most of the others, but it yields a fair fibre which however, contains a somewhat large amount of unfeltable cells.
9	Thrikadamba. Kydia Calycuia	35·8 do	24·8 do	This fibre requires rather strong treatment and is also somewhat short. The yield is fair but I should not consider this wood very suitable.
10	Malayuram, Pterospermium Rubiginosium	39 3 do	16·4 do	The fibre is good and easily tractable. The yield is very fair.
11	Manimarutha. Lager stroemea Flosreginea	48·4 do	60·8 do	This fibre is somewhat hard to treat. The yield is very good, but I should not consider this one of the best.
12	Motti Thuri. Baccaurea Courtallensis	51·4 do	56·7 do	The fibre is very short and is also very full of unfeltable cells and it requires a very hard treatment indeed. Although the yield is very good I should consider this wood useless.

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No.	Name	Yields	Air-dry	Bleach used (Calculated on raw fibre)
13	Chorakali. Diospyros Microphylla	39·7 per cent	12·0 per cent	The fibre is good and the wood is therefore well suited for paper making. The yield is fair.
14	Maravetti. Hydnocarpus Wightiana	41·6 do	36·2 do	This fibre is good although it requires a somewhat strong treatment. The yield is good.
15	Matti Ailanthus Malabarica	43·3 do	22·9 do	This fibre is somewhat short; but it is otherwise good. The yield is also good.
16	Kim Kullyamaram. Canarium Strictum	42·7 do	14·2 do	This fibre is good and the yield is also good.
17	Vattakembil (or Pombara Kembil) Trewia Nudiflora.	36·3 do	12·2 do	This fibre is short and fine and in consequence it would work rather wet. It is, therefore, not one of the best suited. Its yield is fair.
18	Elavu. Bombax Malabaricus	32·7 do	15·8 do	This fibre is good but the yield is somewhat low.
19	Cherapanna. Calophyllum Tomentosum	46·7 do	20·5 do	The fibre is good and of good felting quality and this wood is therefore suitable. The yiled is also good.
20	Chela. Ficus Infectoria	45·9 do	48·0 do	This fibre is good and fairly long, and this wood is therefore suited. The yield in this case also is good.

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No.	Name	Yields		Air-dry		Bleach used (Calculated on raw fibre)
21	Kolamavu. Machaelus Macarantha	35·9	per cent	8·8	per cent	This fibre is fair but the yield is low.
22	Vakka. Sterculia Villosa	47·3	do	37	do	This fibre is somewhat short, and contains a large amount of cells which will not felt and this wood is therefore not one of the better ones. The yield, however, is very good.
23	Aval. Holopetelia Integrifolia	44·3	do	31	do	This fibre is fine, but very long and of very good felting quality. The wood is therefore, well suited. The yield is good.
24	Theithani	43·8	do	29	do	This fibre is somewhat coarse and short, but of a fairly good felting quality. The yield is good and I consider the wood is suitable for paper making.
25	Kavala. Sterculia Guttata	41.3	do.	33	do	This fibre contains an enormous amount of unfeltable cells, and in consequence works very wet. It also requires a heavy treatment, so that although its yield is good I do not consider it well suited.
26	Teruvanchi. Sapindus Trifolittus	39·2	do	19	do	This fibre is somewhat short otherwise it is fairly well suited. The yield is fair.

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No.	Name	Yeilds	Air-dry	Bleach used (Calculated on raw fibre)
27	Charal. Scolopia Crenata	40·8 do	13·7 per cent	The fibre is very good, and easily treated. The yield, however, is not very high but nevertheless I consider this wood to be well suited.
28	Turpinia Napalensis	41·2 do	30·8 do	The fibre is somewhat spiky and brittle and it also contains a large amount of non-felting cells. It requires very strong treatment, and although the yield is good, I do not consider the wood well suited except for lower grade papers.
29	Puvam Wendlandia Notoniana	42·0 do	18·8 do	The fibre is good and easily tractable. The yield is also good and the wood is therefore generally well suited.
30	Pali. Palangium Ellipheum	41·9 do	22·6 do	The fibre is somewhat fine, and contains a rather large amount of unfeltable cells; otherwise it is fairly easily tractable and it gives a good yield. It would, therefore, be suitable for certain classes of soft papers.
31	Perimkurrannan	do	36·8 do	The fibre is also somewhat short, and, again, contains a large amount of unfeltable cells. Also it requires rather strong treatment, but otherwise it yields a fair pulp. The yield is good, the wood might be considered suitable for lower grade papers.

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No.	Name	Yields	Air dry	Bleach used (Calculated on raw fibre)
32	Arbyini Antiaris Toxicaria	48·3 per cent	18·0 per cent	Although this fibre is somewhat short it is pliable and will felt. Also it is easy to treat and its yield is good. I consider this wood, therefore well suited.
33	Kottapuli Carcinia Indica	42·4 do	18·1 do	This fibre, although somewhat fine, felts well. It is easily tractable and gives a good yield. This wood therefore is well suited.
34	Chuvannagil, Cedrela toona	31·7 do	16·1 do	The fibre is fine and short, and also contains a fair amount of unfeltable cells. It is easy to treat, but its yield is low otherwise it is suitable.
35	Vattakamy Macaranga Indica	44·9 do	18·1 do	The fibre is somewhat short, but it felts well, and it is easily tractable. Its yield is good and it is generally fairly well suited.
36	Cheeni. Tetrameles Nudiflora	60·6 do	94·1 do	This fibre is very short and spiky and requires very hard treatment. Although its yield is very good, it is in my opinion only suitable for low grade papers.
37	Malakanjeran, Stephegium parriflora	30·7 do	30·1 do	The fibre is fairly long, and felts well, but it requires a somewhat harder treatment and its yield is very low. This wood therefore, does not belong to those best suited.

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No.	Name	Yields	Air-dry	Bleach used (Calculated on raw fibre)
38	Konna. Cassia fistula	43·2 per cent	15·0 per cent	This fibre is somewhat short but uniform in size. It is easily tractable and gives a good yield. In my opinion, it is well suited for softer papers.
39	Malaveppu, Chickrassia tabularis	44·0 do	23·6 do	The fibre is very fine. but has a good felting quality. It, however, requires a harder treatment but its yield is good and it is therefore suitable.
40	Malmarukku. Erythrina Indica	44·4 do	22·4 do	This fibre is somewhat short and soft, but its felting quality is fair. It is fairly easily tractable whilst its yield is good. It is suitable again for softer papers.
41	Vaka. Albizzia Stipalata	48·3 do	20·3 do	This fibre although somewhat fine, is of good felting quality and fairly easily tractable. The yield moreover, is good and the wood is therefore highly suitable.
42	Ambazham. Spondias Mangifera	32·8 do	15·3 do	This fibre is short and spiky and full of unfeltable cells. It is fairly easily tractable but its yield is low. It would work somewhat wet and it is therefore not suited all round but only as an admixture to other fibres.

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No.	Name	Yields	Ashry	Bleach used (Calculated on raw fibre)
43	Naral. Eugenia Zeylanica	36·8 per cent	17·9 per cent	The fibre is of a fairly good felting quality. It is fairly easy to treat, but its yield is only fair. The wood therefore is only fairly suitable.
44	Pathiri. Stercospermum Suaveolens	38·3 do	11·1 do	This fibre is fine and short and also contains a large amount of non-felting cells, but it is very easy to treat and gives a fair yield. It is suitable for soft papers, and as an admixture to longer fibres.
45	Elengi. Mimasops Nexandra	49·0 do	59·1 do	This fibre is of good felting quality but it requires a very strong treatment indeed. Its yield is very good and the wood, notwithstanding the treatment it requires, is well suited.
46	Thonduapaliyan	45·3 do	22·1 do	This fibre is somewhat short in proportion to its with but it is pliable, and it, therefore felts fairly well. It does not belong to the very easily tractable woods, but it gives a good yield, as it is therefore suitable.
47	Thuranbu. Calophyllum	39·3 do	26 do	This fibre is short but flexible, and there is also a certain amount of unfeltable cells. It requires a very hard treatment, but it gives a fair yield and it does not, therefore, belong to the best set.

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No.	Name	Yeilds	Air-dry	Bleach used (Calculated on raw fibre)
	BAMBOOS.			
48	Kal-mula. Dendrocalamus strictus	37·9 per cent	19.06 per cent	The fibre is very good indeed and owing to its strength and length has very high felting quality. The knots of the bamboo stems boiled out very well indeed, whilst the treatment required is not heavy. In my opinion the fibre would be suited for high class papers
49	Polla-mula. Brambusa Arundinacae	41·8 do	23·2 do	Although in this bamboo the fibre contains a large amount of unfeltable cells it has on account of its own length, a very fair feltable quality. The treatment required is very fairly heavy, whilst the yield is fair. The bamboo, therefore, again is well suited for high class papers, but I do not consider it as good as the previous one.
50	Kal-oda. Ochlandra Travancoria	42·2 do	20·4 do	The fibre, again, is long, and of good felting quality. The treatment required is not too heavy whilst the yield is good. It is suitable for high class papers.
51	Area. Ochlandra Reed. i	43·1 do	20·3 do	This fibre, also, is of good felting quality, the treatment required is not too heavy and the yeild is good. It is therefore suited for high class paper.

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(4) Extract from the review of the Analytical Report by Mr. Lewis Evans, Vice President of the Paper Maker Association:—

"I have carefully gone through Dr. Wirtz' interesting reports on the samples of wood from Cochin, and from these should judge that the following samples have the best chance of being useful for paper making.

Nos. 1, 4, 7, 10, 13, 16, 19, 24, 29, 32, 33, 35, 38, 41 and 48, 50, 51, the best woods probably being 7, 13, 38 and 41.

I think that each variety of wood should be treated separately though probably the 3 good bamboos might be mixed together."

(5) Extract from a note submitted by the Conservator of Forests, dated 13th January 1913:—

"The scheme I propose to lay hereunder is one for the manufacture of paper pulp, raw material for which abounds in the Cochin Forests in the shape of soft wood and bamboos of different kinds.

Of soft woods there are various kinds in our forests as evidenced by the analytical report of Dr. Quirin Wirtz made to Messrs. John Dickinson and Co., Ltd., at the instance of the Darbar. We shall assume that we put up a mill to turn out 200 tons of unbleached pulp per week. Dr. Wirtz experimented upon 47 specimens of air dried wood and he obtained an average of 41% of unbleached pulp. Mr. Sindall experimented upon 12 specimens of air-dried Indian woods and obtained an average of 43% of unbleached pulp. For all practical purposes here I shall adopt the lower figure of 41%. To yield 200 tons of pulp per week the Mill ought to be supplied with 488 tons of air-dried wood which works out to not less than 1952 candies of timber per week. The yearly supply of the Mill should therefore be 1,01,504 candies. Without going further into another details it is evident that our forests will never be able to get this demand for any length of time to justify the erection of pulp factory. The manufacture of pulp from soft woods may, therefore, be dismissed from our minds.

Before dismissing the subject of pulp-making from soft woods it is necessary to point out, as remarked by Mr. Lewis Evans to Mr. Rothney of Messrs. John Dickinson and Co., that each variety of softwood sent by us for experiment should be treated separately and that their pulp is not mixable whereas in the case of bamboos, of which sets have been sent for experiment, their pulp is mixable with no result of deterioration of the stuff.

Next point to be considered is the manufacture of pulp from the various kinds of bamboos. We have here in our forests 2 kinds of bamboos abundantly and about 5 more sorts occur though not to any great extent. The two chief varieties are:—

1. Bambusa arundinacea
2. Dendrocalamus strictes.

These two varieties with two others have been tested by Dr. Wirtz and pronounced to yield good pulp suitable for the manufacture of high class of paper. Dendrocalamus Strictus has been experimented upon by Mr. Sindall and Bambusa Arundinacea by Mr. Rao; and both these authorities have spoken highly of the yield and quality of pulp obtainable from them.

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The latest researches on bamboo pulp have been conducted by Mr. Raitt, Cellulose Expert to the Forest Research Institute at Dehra Dun. I shall, therefore, in my scheme adhere to his conclusions and figures. Mr. Sindall in his experiments on Dendrocalamus Strictus give 50% to 55% of cellulose from internodes and 40% to 42% from nodes and Mr. Raitt who experimented on Bambusa Arundinacea nodes and internodes together gives 49% to 50% of yield. Mr. Sindall recommended the rejection of nodes as being very difficult to treat; but Mr. Raitt has, by applying the latest methods, overcome this difficulty and recommends the utilisation of nodes. His figures therefore are more reliable and up-to-date. But since the percentage of nodes in Dendrocalamus Strictus is more, I shall assume a yield of only 45% of cellulose from air-dry bamboos of this species. A Mill turning out 200 tons a week should have delivered for operations 445 tons of air-dried bamboos, which amounts to 23, 140 tons per year. By actual calculation and weighment I have found out that 500 air-dry bamboos (Bambusa arundinacea) weighs 4·7 tons. Calculating on that basis a Mill turning out 23,140 tons of pulp should be supplied with 24,60,426 bamboos per year. Enumeration of bamboo areas was conducted in Parambikulam forests with the result that an acre was on an average found to contain 172 clumps of 2, 745 stems. Assuming that one-third of these are cut every year, an acre can be expected to yield 915 stems a year. To yield therefore, a total of 24,60,426 stems per year it is necessary to have 2,689 acres which can be gone through every year cutting out a third of the standing stem. In Parambikulam Range bamboos abound from Kuriarkutty to the British boundary to a length of about 10 miles with a minimum width of 2 furlongs. This gives an area of 2½ sq. miles or 1,600 acres; but I am confident that the actual area covered of bamboos is about double if not less. Again in Kodasseri forests bamboos have been found to abound to a distance of about 10 miles from Echipara to Adirapilli with a minimum width of about half a mile. This gives an area of 5 sq. miles or 3,200 acres. Taking Kodassery and Parambikulam alone there is a minimum area of 4,800 acres to extract bamboos from as against 2,689 acres required to yield the necessary stems per year.

At present, contractors in Kodassery and Parambikulam pay Rs. 4 per 100 bamboos for cutting and collecting the same either on the Tram line or on the river bank. But in the present system of extraction about one-third of the bottom of each stem is not cut out but is left in the clump since that part is very difficult of extraction. If the whole stem is to be severed and taken out, the cost of Rs. 6 per 100 is to be incurred. In Kodassery forest I find on enquiry that 100 bamboos can be floated down to Chalakkudi bridge at a cost of not exceeding Rs. 5. If half the bamboos of the year are taken from Kodassery i. e., 12,30,213 stems these can be delivered at the Mill site at a cost not exceeding Rs. 1,10,000. The balance half No. of this can be taken out of the Parambikulam forests where an amount of Rs. 1,60,000 to be paid for collection alone. The transport cost has to be debited to the maintenance charges of Tram Line.

* * * *

Coming to the financial aspect of the concern, I take again Mr. Raitt's figures. He sets aside Rs. 15 per ton of air-dry bamboo and gives the following figures per ton of unbleached pulp:—

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	Rs.	As.	P.
Bamboo	27	8	0
Chemicals	29	14	0
Fuel	17	4	0
Labour and superintendence	7	0	0
Depreciation and repairs	6	5	0
Royalty	1	0	0
Insurance, taxes, stores and sundries	3	9	0
Total	92	8	0

But according to figures obtained here the cost is below Rs. 11—11—0 per ton. Working on that basis and accepting all other figures of Mr. Raitt the cost works up to:—

	Rs.	As.	P.
Bamboo	11	11	0
Chemicals	29	14	0
Fuel	17	4	0
Labour and superintendence	7	0	0
Depreciation and repairs	6	5	0
Royalty	1	0	0
Insurance, etc.	3	9	0
Total	76	11	0

or £ 5—2—3 per ton

	R.	A.	P.	
Freight of one ton of pulp comes to	1	8	0	Calcutta.
Do	2	8	0	to China and Japan.
This working to a total cost of	8	3	0	to Calcutta.
Do	10	3	0	to China and Japan.
The selling price in the above places are.--	14	0	0	at Calcutta.
	16	0	0	in China and Japan.
Lay a clear profit of	6	13	0	at Calcutta
Do	6	13	0	in China and Japan.

per ton of unbleached pulp.

The working expense can be minimised from the above. Mr. Raitt estimates that about £ 50,000 will be required to put up the plant, buildings, chemical, etc. He has estimated to work with steam power. But he writes to me that "electric power if procured from water power will cost less than steam power". Mr. Raitt also estimates that a factory to work 200 tons a week will require only about 500—600 horse power. The Sholayar water-fall inspected and reported on by Mr. Jones in January 1912 is estimated by that gentleman to give 770·7 horsepower i, e., much than we need.

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Assuming that this power is likely to go down very much in the height of the hot season, I dare say, that with a slight cost a permanent fall with a power of 600 horse-power can be had very easily. In this case the working expenses of the factory will be reduced still further than that estimated by Mr. Raitt and shown above.

I would propose to locate the factory at Chalakkudi on the river bank to the west of the Railway bridge for the following reasons.—

1. Fresh water which is indispensible for the working of the factory is available all the year round.

2. Terminus of the Tram Line is close by.

3. The bamboos of Kodasseri forests can be floated down to the Mill.

4. Transport of the pulp from the Mill to Cochin by Railway or water route is feasible. Railway freight and delivery at Cochin will not exceed 0—12—0 a ton, but if caused by water the cost will not exceed 0—8—0 a ton.

Before concluding it will not be amiss to state that Mr. Raitt had in the beginning of his booklet asked four questions and answered as follows.

His four queries are.—

1. The suitability of the five species (he worked with) mentioned for the manufacture of cellulose at a marketable cost.

2. Whether the fact that culms of all wages must be dealt with mixed and as a whole constitutes a serious difficulty.

3. Whether the nodes must be cut out and rejected.

4. Whether the difference between species will permit of their being mixed during treatment.

His replies to these after experiment are:—

1. All five species are suitable for the manufacture of cellulose at a marketable cost assuming that they can be delivered to Millsite-at a cost not exceeding Rs. 15 per ton of air-dry bamboo.

2. Culms of all wages may be mixed indiscriminately in treatment.

3. Nodes need not be rejected.

4. If required all the species mentioned except Melocanna (not found in Cochin forests) may be mixed in treatment. He further adds:— The serious and special difficulties hitherto experienced in the bamboo, viz. irreducible nodes, irregular yields, irregular digestion of mixed ages and high cost of bleaching can all be overcome by the adoption of the following treatment:—

1. Culms not to be cut until the shoots of the year are full grown.

2. A period of seasoning not less than 3 months to elapse before they are used.

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3. Crushing.
4. Extraction of starchy matter.
5. Digestion with sulphate liquor."

(6) Letter of enquiry from London regarding the concessions the Darbar are prepared to grant for the manufacture of bamboo pulp.

Order dated 18th February 1911.—Ref. on C. No. 597/88.

In the Diwan's Proceedings of December 1910, it was announced that, if any private Firm or Company applied for experimental concession in the specially adapted areas for making wood-pulp, the Darbar will be ready to consider the applications favourably as they are decidedly of opinion that private enterprise has greater chance of success than Government initiative. Since the above Proceedings was passed the Darbar have received the expert's report on the various specimens of wood and bamboos forwarded to London, altogether 51 in number and also the review of such report by the Vice President of the Paper Maker's Association. The pulp sheets prepared from the specimens have already been exhibited at the Industrial Exhibition of the State. As a letter of enquiry has now been received from London asking for particulars of the concessions that the Darbar are prepared to grant in this matter, the expert's report and all connected papers will now be published for general information and the nature of the concessions proposed will be described as hereunder. The Conservator's report shows that the four specimens of bamboos experimented upon by Dr. Wirtz are found in abundance in the Cochin Forests.

The Darbar will be prepared to grant

(1) land that may be required for the factory buildings, etc., at Chalakkudi free of assessment for a period of 12 years.

(2) supply of bamboo necessary for the manufacture of pulp for a period of five years at the actual felling and transport charges from the bamboo-producing areas to the Mill site.

(3) supply of fuel that may be required for the factory at actual collection charges according to prevailing rates for the first five years and at 8 annas profit per ton to Government for the remaining 7 years, and

(4) exemption from royalty on the pulp manufactured for the first five years after which a charge of one rupee per ton only will be charged.

The Darbar will be prepared to consider favourably any other alternative proposals for concessions such as leasing out bamboo-producing lands for long periods for purposes of extracting bamboos for paper manufacture and for growing certain selected grades of bamboos in those areas.

A copy of these Proceedings will now be forwarded to the writer of the paper read as 6th paper above.

Read also (2) subsequent correspondence ending with minutes of the meeting of the Industrial Advisory Board held on 23rd July 1921 submitted by the Superintendent of Industries with his note dated 20th August 1921 C. No. 1590/96.

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Government order dated 5th December 1921, C. No. 136/97.

The question of starting a Paper Mill in the State by developing the wood pulp industry has been engaging the attention of the Government for some time past. The Special Officer deputed to conduct an Industrial and Economic Survey of the State has pointed out among other things, that there is abundance of raw materials for making pulp suitable for the manufacture of paper. A complete collection of soft woods, grass and bamboos suitable for wood pulp was made for being tested by experts in Europe and their experiments have yielded favourable results. Further enquiries and experiments have shown that there are splendid possibilities for the industry in Cochin. The members of the Industrial Advisory Board are also convinced that there is ample scope for starting and running a paper mill in the State with success by private enterprise and they recommend invitation of applications from interested persons or companies both from within and outside Cochin.

2. The Government have contributed in no small measure to the financing of many of the industrial concerns now in progress and they consider that the paper pulp industry might well be left to the enterprise of private individuals or companies, the State furnishing such facilities as would help them on. The nature of these facilities and the conditions under which they would be made available are specified below for general information:—

FACILITIES.

(1) Bamboos sufficient to produce 8,000 tons of paper annually will be allowed to be collected by the individual or the company at a slightly favourable rate of seigniorage for the first five years and at the usual seigniorage thereafter.

(2) Government will undertake to acquire the land necessary for the purpose of the factory at the cost of the individual or the Company as the case may be.

(3) Government will undertake not to give similar concessions regarding bamboos for paper manufacture to any other individual or company for a period of 10 years.

(4) Government will agree to purchase all the paper necessary for State purposes from the paper mill provided the quality is good and the price reasonable.

(5) Government will allow the company the use of the Forest Tramway for the transport of goods of the mill at concessional rates.

CONDITIONS.

(1) Applications should reach Government by 1st March 1922. Government may accept or reject applications at their entire discretion.

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(2) The share list must first be kept open to bonafide Cochinites alone for a period of two months from the date of the publication of the prospectus; applications from outside may then be invited with the approval of Government for the unsubscribed portion of the capital, if any.

(3) The mill should be located in Chalakkudi at a site approved by Government.

(4) Memorandum and Articles of Association should have the approval of Government before registration.

(5) Government may impose such further conditions as they may think fit.

3. Preference will be given to applications from bona-fide Cochinites.

(True extract)

(Sd P. DAMODARA MENON,
Secretary to the Diwan.

To

The Superintendent of Industries.
,, Conservator of Forests
,, Diwan Peishkar.
,, Tramway Engineer.
,, Sarvadhikariakar.
,, British Resident (with covering letter).
,, Press Bureau.
,, Gazette.

APPENDII V.

Office of the Director of Public Health,
and Panchayats,
Trichur, 28th Karkadagam 1110.

No. E. 2598/1110.

MEMO

Nomination – Ollur Panchayat.

Reference:—Report dated 20th Karkadagam 1110, C. 731/1110 from the Panchayat Inspector, Northern Division.

The Ambalavasi community has been representing the Panchayat from a very long time. The Inspector is, therefore, requested to report whether there are no other caste Hindus to represent the Panchayat for Edakunni village. He should also submit alternative proposals in regard to the nomination of candidates for the two villages.

2. This should be treated as urgent

Signed.
Director.

To

The Panchayat Inspector, Northern Division.

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